



Occupational Awareness of Asbestos



Objectives

In this course, we will discuss the following:

- Health hazards and symptoms of exposure
- Potential asbestos in the workplace
- Application of the hierarchy of controls
- Rules regarding asbestos-related work
- Finding additional resources for information





Asbestos Awareness

1910.1001 and 1926.1101

- **1910.1001**

- (j)(2) Duties of employers, building and facility owners
- (k) Housekeeping

- **1926.1101**

- (d) Multi-employer worksites
- (k) Housekeeping





What is Asbestos?

- Naturally occurring mineral, mined all over the world
- Long silky fibers
- Resistant to abrasion
- Inert to acid and alkaline solutions
- Stable at high temperatures
- Very high tensile strength

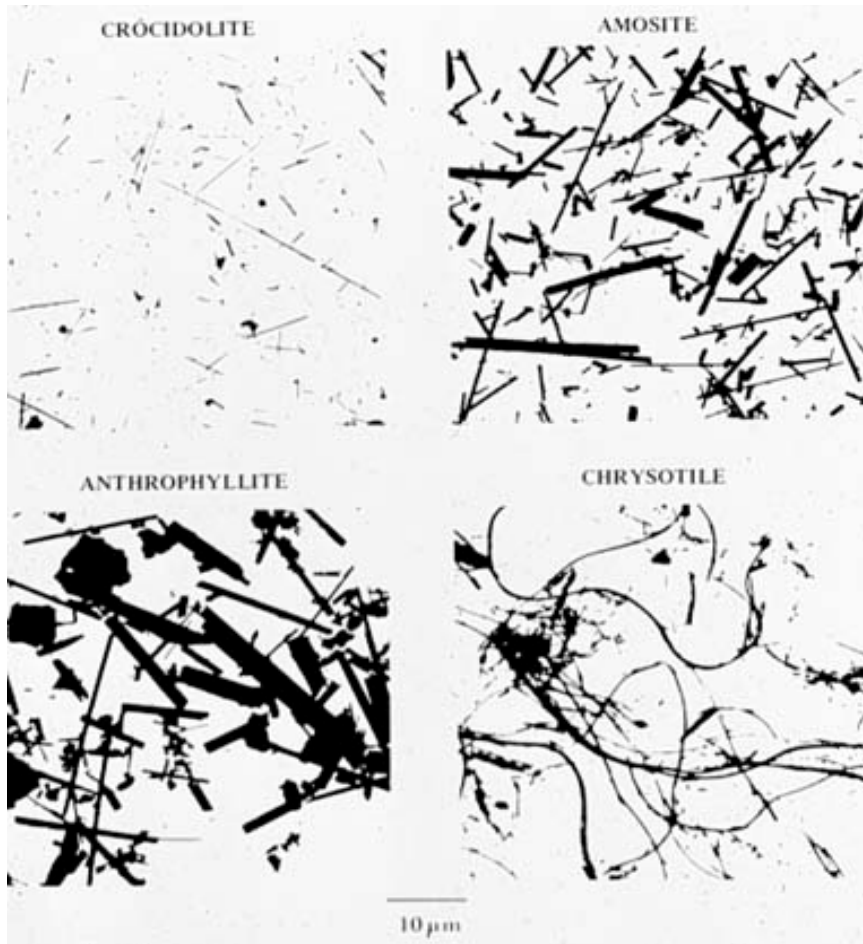


Types of Asbestos

- **Serpentine** (wavy)
 - Chrysotile – 95% of all asbestos in use
- **Amphibole** (straight)
 - Amosite
 - Crocidolite
 - Actinolite
 - Anthophyllite
 - Tremolite



Serpentine and Amphibole



Serpentine Asbestos

- Unmilled bulk sample

Chrysotile



Amphibole Asbestos

- Unmilled bulk sample

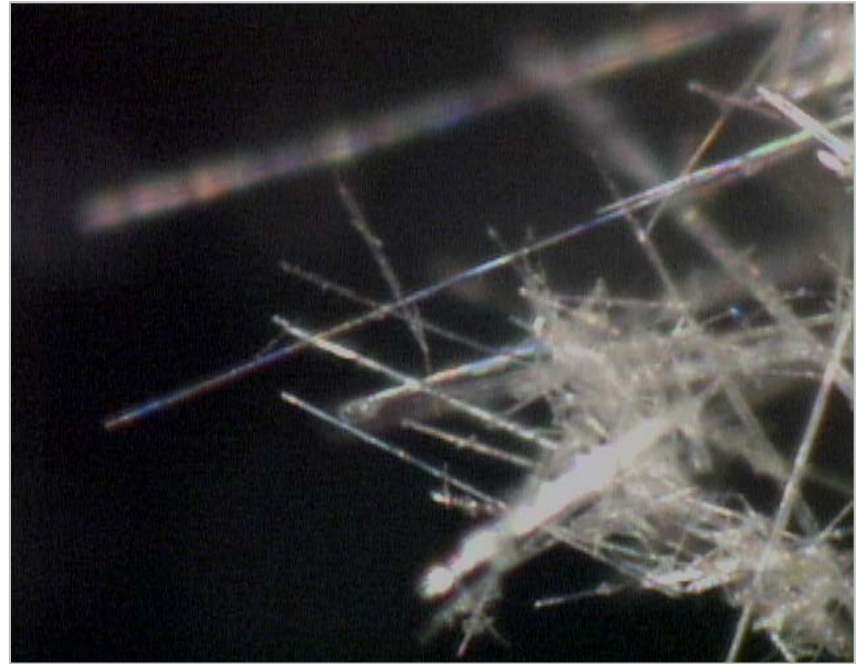
Actinolite



Amphibole Asbestos

- 40x stereoscopic image

Actinolite





ACM vs. PACM

1910.1001(b) 1926.1101(b)

● ACM

- “Asbestos-containing material,” any material containing $>1\%$ asbestos.

● PACM

- “Presumed asbestos-containing material,” thermal system insulation and surfacing material found in buildings constructed no later than 1980.





Asbestos Exposure

- If the ACM can be crumbled, pulverized, or reduced to powder by hand pressure, it is known as **friable asbestos**.
 - When friable ACM is damaged or disturbed, it releases fibers into the air.
 - Airborne fibers range in size from 0.1 to 10 microns in length.
 - » These are the fibers that can be inhaled.



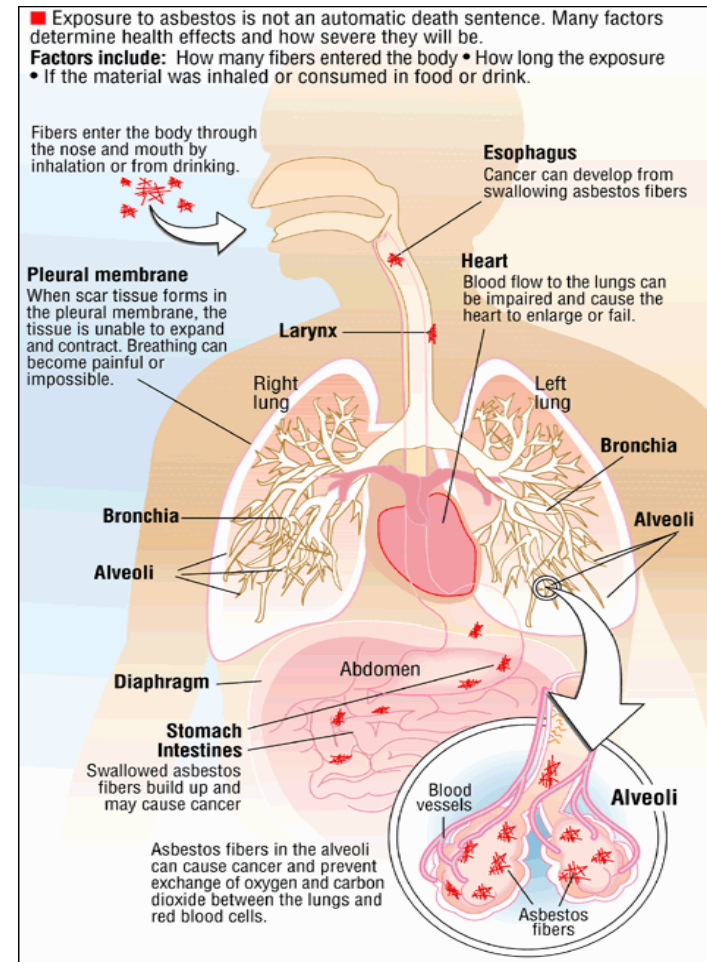
Asbestos Exposure

- Heaviest exposure occurs in the construction industry during abatement, renovation, and demolition work
- Automotive brake repair and installers
- Trades encountering existing asbestos during repairs or renovation
- Firefighters
- Demolition workers, drywall removers
- Asbestos removal contractors



How Asbestos Affects the Body

- Exposure to airborne friable asbestos may result in a potential health risk because persons breathing the air may breathe in asbestos fibers.



Asbestos Related Diseases

- **Asbestosis**

- Chronic lung ailment caused by a build-up of scar tissue inside the lungs

- **Mesothelioma**

- An asbestos caused cancer of the chest cavity lining or abdominal cavity

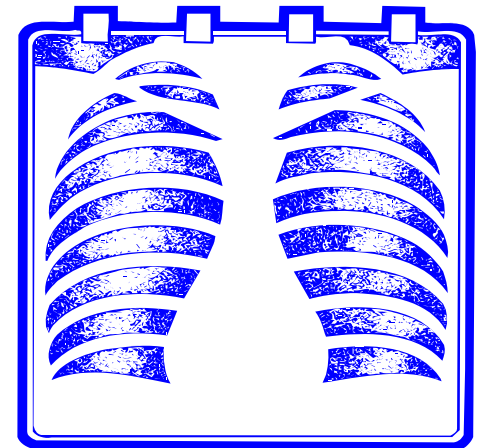


- **Other cancers**

- Lung, esophagus, stomach, colon and pancreas

Symptoms

- Symptoms which may indicate an exam is needed:
 - Shortness of breath
 - A cough or a change in cough pattern
 - Blood in the sputum coughed up from the lungs
 - Pain in the chest or abdomen
 - Difficulty in swallowing
 - Prolonged hoarseness
 - Significant weight loss



Definitions

1910.1001(b) and 1926.1101(b)

- **Authorized person**

- Authorized by employer and required to be in work area

- **Regulated area**

- Established by employer to demarcate areas of concentrations of asbestos that exceed or may exceed PELs



Uses of Asbestos

- ACM can be classified into one of three types:
 - **Spray-on:** used on ceilings or walls
 - **Thermal system insulation (TSI):** wrap on boilers, pipes and ducts
 - **Miscellaneous:** floor tile, ceiling tile, gaskets, curtains, roofing material, siding, tar, mastics, wiring, etc.



Where is Asbestos Found?

- Carpet replacement →

- Lab renovation





Textured ACM Ceiling





Ductwork

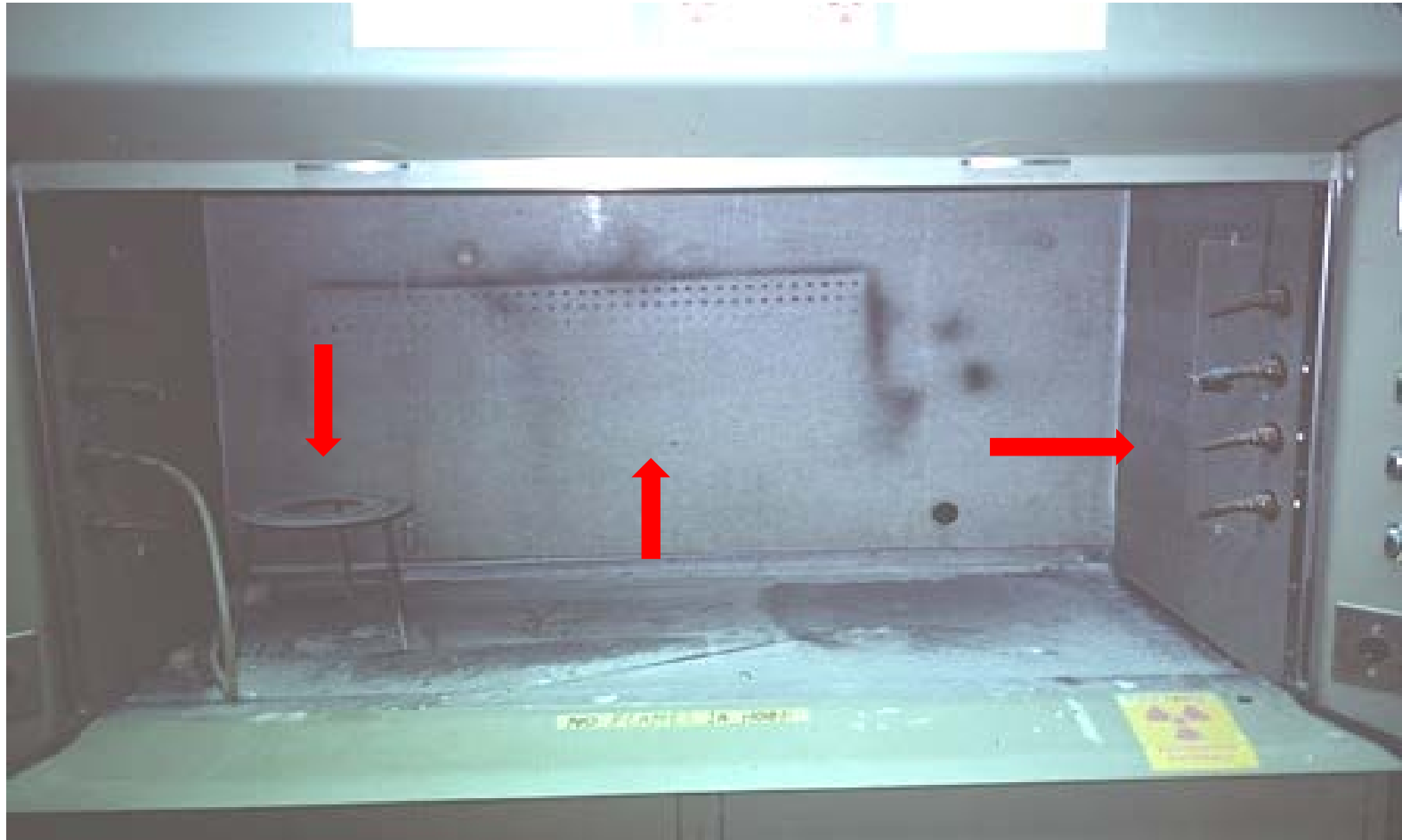


Spray-On Coating





Lab Equipment





Flooring



Abatement





Disposal



Hierarchy of Controls

- Engineering controls
- Work practices controls
- PPE
- Administrative controls



Engineering Controls

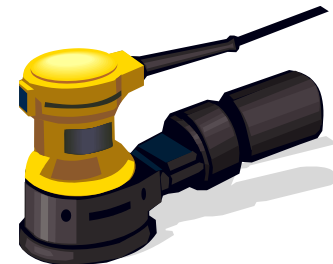
- Negative pressure enclosure HEPA vacuum systems

- Glove bags
- Glove boxes



- Local exhaust ventilation on dust producing power tools

- Saws
- Drills





Engineering Controls



Asbestos Brake



Asbestos-Free



Work Practice Controls

- **KEEP IT WET!**
- Promptly clean up and dispose of asbestos containing waste.
- Do NOT use compressed air or high speed disk saws.
- Do NOT dry sweep asbestos dust.
- No employee rotation to reduce TWAs.



Why are these incorrect practices?





Does this abatement look correct?



Personal Protective Equipment

- Respiratory protection and clothing
 - Regulated areas
 - Construction Class I, II, and III
 - Above the permissible exposure level and action level





Personal Protective Equipment

- When a respirator is required, the employer must comply with:
 - 29 CFR 1910.134 – Respiratory Protection Standard



Respiratory Protection

1910.134

Fiber/CC	Condition	Respirator
≤ 1	$\leq 10 \times \text{PEL}$	Half Face APR w/HEPA
≤ 5	$\leq 50 \times \text{PEL}$	Full Face (FF) APR w/HEPA
≤ 100	$\leq 1000 \times \text{PEL}$	FF PAPR w/HEPA - or Supplied Air (SA) Continuous Mode
≤ 100	$\leq 1000 \times \text{PEL}$	FF SA Pressure Demand (PD)
> 100	$> 10,000 \times \text{PEL}$	FF SA PD SCBA

Administrative Controls

- Asbestos exposure assessment
- Medical surveillance
- Competent person supervision
- Signs, labels and demarcation
- Training of employees
- Communication between employer, employee, and facility owner





Required Documentation

- Objective exposure data (while using)
- Exposure measurements (+ 30 years)
- Training records (+ 1 year)
- Data to rebut PACM (while using)
- Information on locations of ACM transfer with ownership





Responsibility

- Multi-employer worksite
 - » Inform others of measures to control exposures
 - » Hazards abated by contractor who created
 - » Adjacent employer WILL check containment
 - » GC requires compliance
- Building/facility owner
- Competent person





Responsibility to Communicate

- Know where asbestos is located
 - Recognize asbestos and assess its condition
 - » ACM PACM TSI
 - Avoid producing asbestos dust
 - Avoid breathing asbestos fibers
 - Know and comply with the OSH rules
 - » 1910.1001 1926.1101
 - Respond properly to fiber release episodes
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Additional Information

- **N.C. Department of Labor**

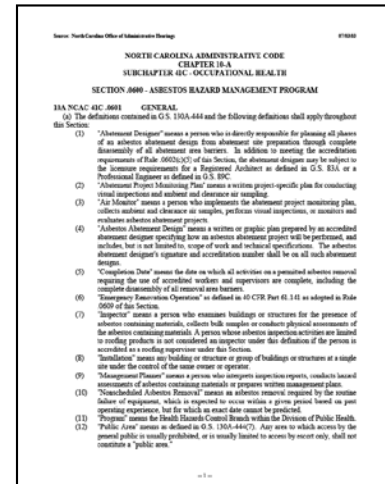
- Consultative Services: (919) 807-2899
- Education, Training and Technical Assistance: (919) 807-2875

- **NIOSH**

- 1-800-35-NIOSH
- <http://www.cdc.gov/niosh>

- **N.C. Health Hazards Control Unit**

- (919) 707-5950



Summary

In this course, we discussed:

- Health hazards and symptoms of exposure to asbestos
- How to identify potential asbestos in the workplace
- The hierarchy of controls
- Identification of asbestos standards
- Additional asbestos resources



Thank You For Attending!

Final Questions?



Handouts

- **COMMON QUESTIONS:** Asbestos Hazard Management Program Health Hazards Control Unit - NC DHHS
 - **NC DOL Industry Alert:** NCDOL Expands Health Emphasis Program
 - **NIOSH CURRENT INTELLIGENCE BULLETIN - Asbestos Fibers and Other Elongated Mineral Particles: State of the Science and Roadmap for Research – NIOSH DHHS and CDC (National Institute for Occupational Safety and Health)**
 - <http://www.osha.gov/>
 - Asbestos Facts
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